



CE



## Operating Manual

### EEx p iPURGE150

II 2GD EEx e m ia IIC T4 Ta70°C

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# 1 Introduction

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## 1.1 General Information on Types of Protection

Electrical equipment which is intended for use in a Zone 2 hazardous area as defined by ATEX regulations, must be protected by one of the following protection concepts; EEx-d (flameproof), EEx-e, EEx-i EEx-n, EEx-p.

For some types of electrical equipment, the type of protection EEx-p is the simplest and most economical, and in certain cases it is the only possible one.

## 1.2 Pressurised Apparatus

In the case of pressurised apparatus for zone 2, there are two basic modes: (a) operation with compensation for leakage losses, and (b) operation with continuous purging (a continuous flow of protective gas). In both cases, the enclosure must be protected according IP 40 at least, Extronics recommend IP 65.

### 1.2.1 Operation with Initial Purging and Compensation for Leakage Losses

Initially the enclosure is purged, in order to remove any potentially explosive gas mixture which may be present inside the enclosure. For this purpose the iPURGE150 controller activates an external purge valve, the purge time can be adjusted with a freely programmable purging time counter (0-255min.).

After the purging is complete a sufficient flow of compressed air or inert gas is introduced to compensate for any enclosure leakage and to maintain a minimum overpressure in relation to the surrounding atmosphere.

The minimum overpressure allowed for pressurised apparatus mounted in Zone 2 is 0.25 mbar (25 Pa). The minimum value readable by the iPURGE150 is 0.5mbar (50 Pa) this can be easily read from the display of the iPURGE150 controller. The iPURGE150 also has two independently programmable volt free relay contacts which may be connected with different warning devices (beacons, indicator lamps, acoustic devices, DCS, PLC, etc.). These contacts can be used to indicate that the pressurised enclosure has fallen below the minimum pressure.

### 1.2.2 Operation with Continuous Purging

In this mode, the enclosure is purged continuously with compressed air or inert gas, this mode is often used to dissipate the heat generated in the enclosure.

During purging and continuous purging operation, an overpressure of at least 4 mbar is maintained within the enclosure.

### 1.3 iPURGE150 EEx p Controller

The iPURGE150 controls the purge cycle and maintains overpressure once purging has been completed. The controller is equipped with a LED display which performs two functions during normal operation; displays the remaining purge time, and displays the enclosure overpressure once purging has been completed.

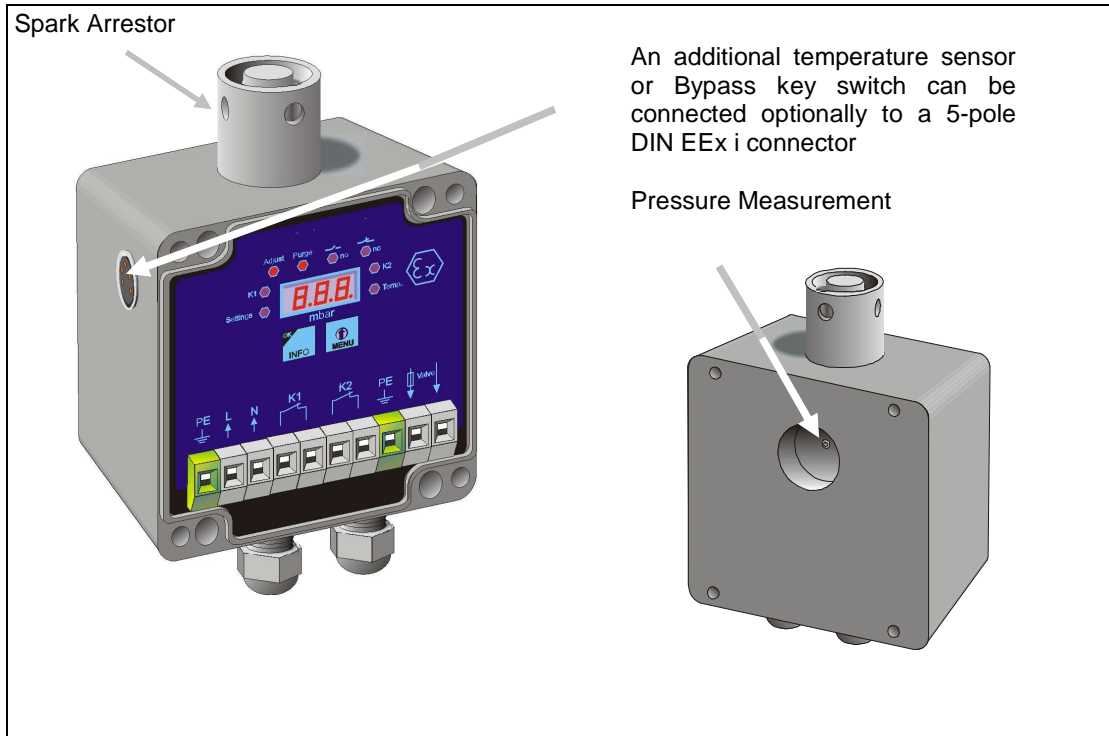


Fig 1: View with removed front cover

- Reliable electronic design.
- Robust acid and oil proof housing even for offshore applications (certified IP66)
- 3-digit 8mm LED display
- Magnifying acrylic glass lens in the front cover.
- Patented Wheel-Shuttle® for easy modification of parameters.
- Optional High-Flow - technologies for shortening purging times on larger EEx-p enclosures
- Optional EEx-i connectors for external sensors, remote and control devices

## 2 Safety Information and Notes

### 2.1 Storage of this Manual

Keep this user manual safe and in the vicinity of the controller. All persons who have to work on or with the controller should be advised on where the manual is stored.

### 2.2 List of Notes

The notes supplied in this chapter provide information on the following.

- **Danger / Warning.**
  - Possible hazard to life or health.
- **Caution**
  - Possible damage to property.
- **Important**
  - Possible damage to enclosure, purge controller or associated equipment.
- **Information**
  - Notes on the optimum use of the controller

<b>Warning</b>	<b>Before making any other electrical connection, link up the protective earth terminal and a protective earth conductor.</b>
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<b>Warning!</b>	<b>- Electrostatic hazard - Clean only with a moist cloth and detergent</b>
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<b>Important</b>	<b>Before switching on, ensure that the operating voltages of the control unit and the digital/proportional controller correspond to mains voltage.</b>
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<b>Important</b>	<b>Ensure that only fuses of the specified type and the appropriate current rating are used as replacements. Jumpering or bypassing of fuses or back-up fuses is inadmissible on principle.</b>
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<b>Important</b>	<b>Before setting the units to work, read the technical documentation carefully.</b>
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<b>Important</b>	<b>The latest version of the technical documentation or the corresponding technical supplements is valid in each case.</b>
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<b>Important</b>	<b>Installation, maintenance and cleaning of the units must only be performed by persons trained and authorized for this purpose, insofar as they are familiar with the units.</b>
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<b>Important</b>	For the installation, maintenance and cleaning of the units, it is absolutely necessary to observe the applicable ordinances and provisions concerned with explosion protection (VDE 0160, VDE 0165 or EN 60079-14, EN 50014 - 50039) as well as the Accident Prevention Regulations.
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<b>Caution</b>	Whenever you open covers or remove parts – except if this is easily possible by hand – it is possible that electrically live parts may be exposed. Even terminal components may be electrically live.
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<b>Caution</b>	The units comply with the state of the art and must only be connected to systems which have been approved for this purpose by Extronics.
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<b>Caution</b>	It is prohibited for the operator or his staff to open the units. This may only be done by specifically authorized personnel of Extronics. Extronics limited is not liable for any subsequent damage.
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<b>Caution</b>	Modifications and conversions to the units are not permissible and will cause the Ex protection and the guarantee to become void. Extronics limited is not liable for any subsequent damage.
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<b>Caution</b>	The operating voltage of the units shall only lie within the limits specified in the technical documentation under Technical Data. Extronics limited is not liable for any subsequent damage.
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<b>Caution</b>	The technical data specified for the hazardous area comply with the values certified in the European EEx approval. The user bears the sole responsibility of examining the equipment with regard to its suitability for the intended application and environmental conditions. Extronics limited accepts no liability for any lack of suitability.
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## 2.3 Notes as per Ordinance on Hazardous Materials

Important notes for equipment installed in areas where materials hazardous to health are present.

- a) All units and/or systems sent to Extronics for repair must be free of any hazardous materials (acids, alkalis, solutions, potentially explosive gas mixtures etc.).
- b) All units and/or systems sent to Extronics must be treated so that they do not contain any dangerous fluids or other hazardous materials. For this reason, in the case of units or systems which have come into contact with hazardous working materials, these materials must be neutralized appropriately.
- c) In the event that service and repair is required, the measures described under (a) and (b) must be confirmed **in writing**.
- d) Costs incurred through disposal of hazardous materials during a repair will be invoiced to the owner of the equipment.

## 3 Structure and Function

The iPURGE150 together with the associated enclosure and inlet valve provides the necessary functionality and sensors for compliance with EN50015, EN60079-14 and IEC 60079-2.

Please note that the controller and valve alone do not make an enclosure suitable for deployment in a zone 2 area, the enclosure must be tested in accordance with EN50015, or EN60079-14 and IEC 60079-2.

### 3.1 System Operation

The controller consists mainly of two components which must be installed separately:

- iPURGE150 controller.
- Air inlet kit, consisting of pressure regulator, pressure gauge and digital valve.

The controller purges the enclosure by supplying a signal to the digital valve, the valve opens and allows protective gas into the enclosure. The pressure and therefore the flow of gas is regulated by the pressure regulator. Once purging is complete the controller closes the valve and then monitors and regulates the overpressure in the enclosure. The digital valve is equipped with a valve bypass facility which is required to compensate for the leakage of the enclosure with operating the valve

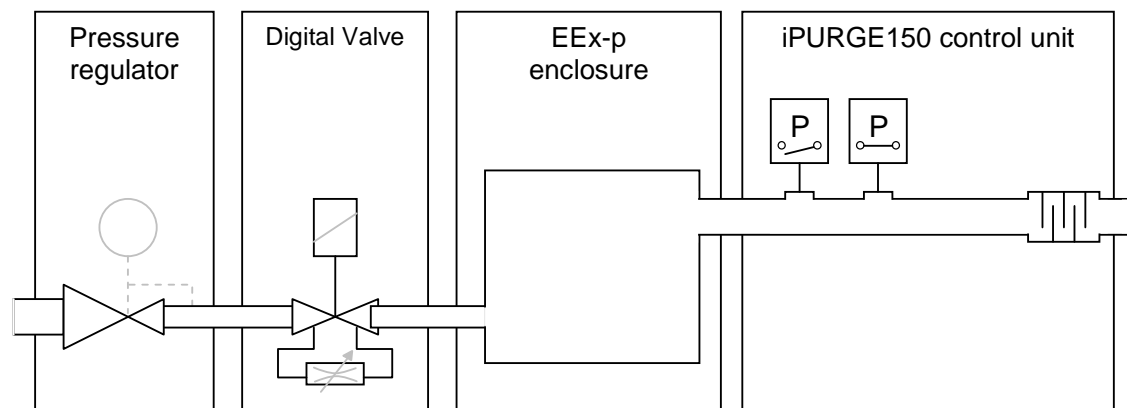


Fig. 2: System Diagram

Optionally you can expand the iPURGE150 system with the following components:

- ❖ Proportional valve for purging for electronic control of the enclosure pressure
- ❖ External pressure sensor
- ❖ External temperature sensor

**Important** The latest version of the technical documentation or the corresponding technical supplements is valid in each case.

**Caution** The units must only be connected to systems which have been approved by Extronics.



### 3.2 General Functional Description

On power up the iPURGE150 controller purges the Exp enclosure removing any hazardous atmosphere which may be present inside the enclosure, once the purging cycle is complete the controller then maintains, monitors, controls and regulates an overpressure at least 50 Pa of protective gas in the enclosure in relation to the surrounding atmosphere.

The digital valve is connected to the "valve" terminals(8,9,10). Two volt free alarm contacts are also provided on terminals 4,5 and 6,7 of control unit.

All adjustments to the system parameters can be performed via the rotary shuttle wheel and OK button, further details can be found in sections 3.3 and 3.4.

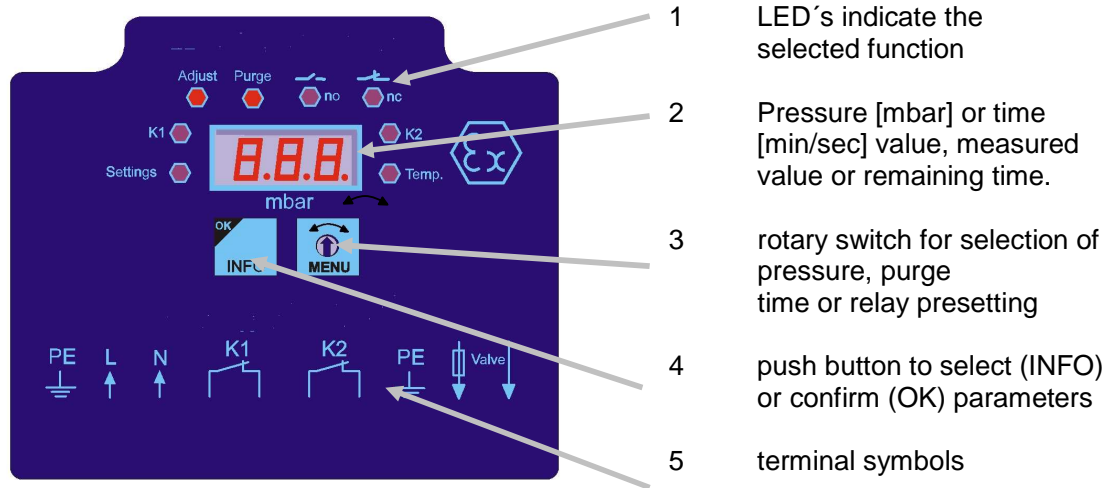


Fig 3: Front panel of the control unit

- 1 Dual purpose LED's, Indicating the selected function during programming, or controller status during operation.
- 2 Dual purpose LED-display, displays the programmed function value during programming, and the measured pressure / remaining purge time during operation.
- 3 Rotary switch (Wheel Shuttle®) which operates with a small screw driver. Rotating the switch selects the parameter or modifies its value.
- 4 Push button to select a parameter (INFO) or to confirm a programmed value (OK).
- 5 Symbols for the terminal functions. (PE = protection earth, K = relay contact)

### 3.3 How to Read Parameters

The following parameters can be adjusted or indicated:

- pressure level, at which each of the relay contacts K1, K2 switches; adjustable from 0.5 - 25 mbar( 50-2500 Pa) in steps of 0.1 mbar (10 Pa).
- purge time in minutes, after which overpressure control starts
- function of relay contacts K1/K2 as "normally open" or "normally closed"
- Optional, temperature limit, at which the valve for cooling air is switched on

In normal overpressure operation the display of the control unit monitors the pressure difference between the enclosure and the surrounding atmosphere in mbar.

- ◆ After pressing the **INFO**-button, two LED's will light **Settings** and **K1**. The controller will then show the programmed overpressure limit, at which K1 switches state. Additionally either LED **nc** (= normally closed) or **no** (= normally open) will light, This will depend on the programmed function of **K1**.
- ◆ After pressing the **INFO**-button again, the same values appear for contact **K2**.
- ◆ After pressing the **INFO**-button for the third time the LED's **Settings** and **Purge** will light, the display indicates the purge time in minutes, which starts, when the overpressure reaches the programmed overpressure level for contact K1. Factory setting is 0 minutes, i.e. no purge.
- ◆ Pressing the **INFO**-button for the fourth time will only have effect if the temperature option is present. If the option is present the LED **Settings** and LED **Temp** will light. The display shows the temperature limit in °C, at this temperature the controller will open the valve allowing cool air to enter the enclosure.
- ◆ Pressing the **INFO**-button again will lead you back to the **K1** settings.
- ◆ The display will automatically switch back to normal operation after ten seconds.

This information can be found on the inside cover of the purge controller. The information can also be found in figure 4 of this manual.

### 3.4 How to Modify Parameters

In order to modify the values mentioned in section 3.3, it is necessary to select them by rotating the **MENU** rotary switch using a small flat blade screw drive, such as a terminal driver.

- Turning the **MENU** rotary switch lights each parameter LED in turn, this relates to **K1,K2**, **Purge Time**, and **Temp**.
- With the parameter selected press **OK** to enter the programming procedure. Now the LED **Adjust** flashes, while the LED's of the selected parameter (**K1**, **K2**, **purge time** or **temp**.) and LED "Settings" stay steady on.
- Adjust the desired value by turning the **MENU**-switch.
- The value is stored by pressing **OK**.
- Once the values for K1 or K2 have been programmed one of the LED's "**no**" or "**nc**" will flash. (The **Adjust** LED will continue to flash and the **Settings** will stay steady on) The function of the contact may then be select as **no** or **nc**, by rotating the MENU Switch, confirm the desired setting by pressing **OK**.

The programming procedure can easily be interrupted at any time by not turning or pressing any switch for more than 10 seconds. The display will return to normal operation and monitor the actual measured overpressure.

### no / nc

A contact, which has been programmed as "nc" will be closed when the overpressure is below the programmed value. For example If K1 is programmed as "nc" and the pressure for K1 was adjusted to 10 mbar, K1 will open at an overpressure of more than 10 mbar. Please note that if a contact is selected as nc then the contact is closed whilst the controller is switched off.

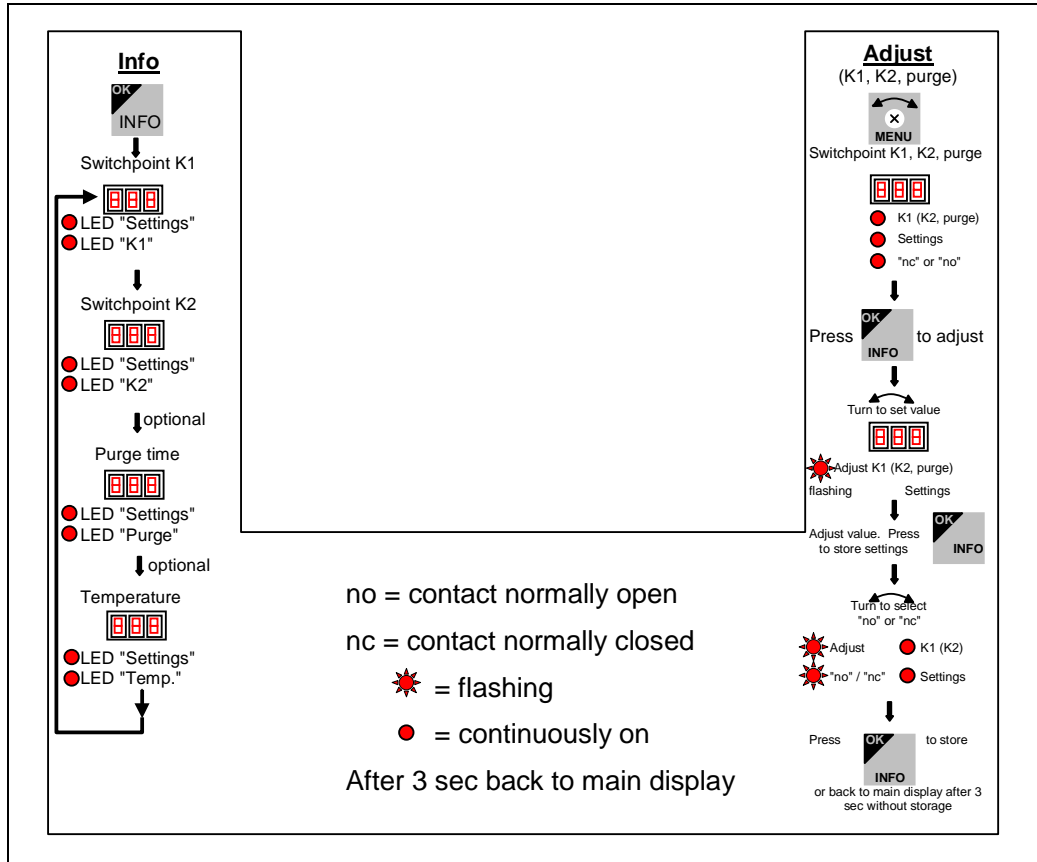


Fig. 4: Graphical programming advice inside of the front panel cover

### Purge Time

If the controller is programmed with a purge time, this purge time starts when air flow exceeds a level of approximately 0.5 l/s. If during purge the internal cabinet pressure falls below the pre-programmed level for more than 10 seconds, the purge time counter resets. Once the purge cycle is complete the programmed contacts are energised.

The purge time can be programmed from 0 to 255 minutes. During the last minute of the purge time, the display counts down in seconds. If purge is not required, the purge time may be set at 0 minutes. If the purge time is not set then the purge LED will then not appear in the info-button sequence, however it will appear in the programming menu. Factory preset is 0 minutes.

To cancel the purge timer rotate the **Menu** switch one click in any direction, this should only be performed during commissioning.

### 3.5 Behaviour during Powering up

#### Main Modes

When the controller is powered up it decides which type of digital valve is connected. There are two main modes: P1 and P2. During the power up self test the mode can be read from the display. This mode can be changed by pressing the menu switch for 10 seconds.

Mode P1: iPURGE150 connected to an EEx digital valve (function: n.c = normally closed)

Mode P2: iPURGE150 connected to an standard digital valve (function: n.o = normally open)

**Important:** A standard valve (mode P2) must always be mounted inside of the EEx p enclosure.

#### With Purge Sequence

If the programmed purge time is greater than 0, then the programmed value appears on the display after powering up the controller. The "**Purge**" LED and the numeric display flash, until the internal enclosure pressure reaches the value programmed for K1. After this pressure is reached the purge time begins its count down, the remaining time can be viewed on the display, and the "**Purge**" LED will remain steady on during this time. If the pressure falls below the value programmed for K1 during purging, the counter stops and does not continue the countdown until the pressure reaches the K1 value. During this time the "**Purge**" LED and the display flash again. If the pressure does not reach the programmed value for more than 10 seconds, the counter resets to the programmed purge time.

When the purge time reaches zero the display will show the measured pressure difference between enclosure and ambient. Relays K1 and K2 will react on this pressure according to their respective programmed pressure value, the pneumatic valve output will be pulsed to attempt to keep the internal enclosure pressure higher than the value programmed in K1.

#### Without Purging (Optional)

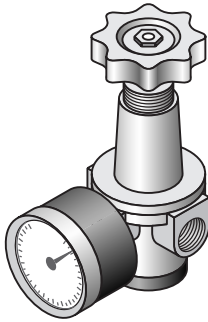
The display shows the measured pressure difference between enclosure and ambient. Relays K1 and K2 will react on this pressure according to the respective programmed pressure value. If the iPURGE150 is equipped with the optional temperature measurement the valve output open and close according to the enclosure temperature.

### 3.6 Air inlet kit

The air inlet kit, comprises of a pressure gauge and pneumatic digital valve.

### 3.7 Pressure Regulator

The pressure regulator, with pressure gauge and automatic venting, is mounted externally on the enclosure and is bolted in an airtight manner to the digital valve, through the 1/4" thread.



Pressure regulator

### 3.8 Technical Data for the Pressure Regulator

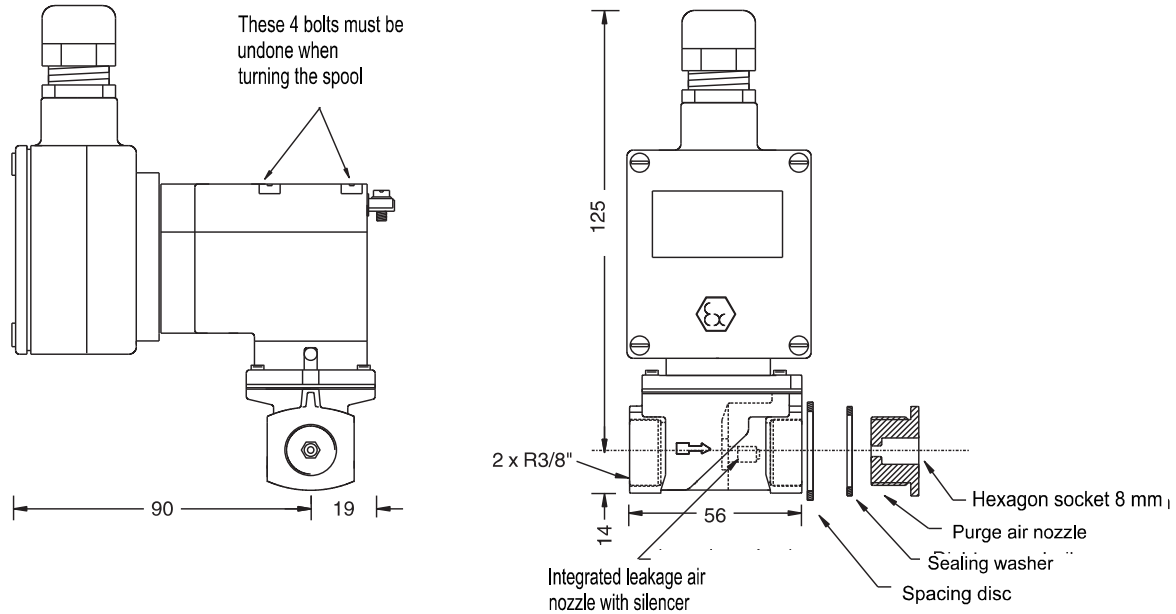
Dimensions (mm):	length (D):	113
	width (A):	44
	height (A):	44
	hole drilled in enclosure:	17
Thread:	1/4"	
Extraction pressure:	0,5 – 3 bar	
Flow rate:	490 l/min	
Weight:	0,5 kg	

### 3.9 Technical Data for Digital Valve

The digital valve is used for enclosure sizes up to 2.000 L. The valve functions in the 2-position control mode (open / closed).

Type iPURGE<sub>dvx</sub> PTB No.: Ex-89.C.1034

Type of Ex protection: EEx ed IIC T4/T5



#### *Dimensioned drawing of the digital controller iPURGE<sub>dvx</sub>*

Mains voltage:	230 V AC (+/-10%) / universal current
current	Optional: 12 / 24 / 115 V universal
Current consumption:	30 mA at 230 V; back-up fuse 0,08 A
	60 mA at 115 V; back-up fuse 0,125 A
	300 mA at 24 V; back-up fuse 0,63 A
	600 mA at 12 V; back-up fuse 1,0 A
Ambient temperature during storage/transport:	-40 °C bis +60 °C, without condensation
Ambient temperature during operation:	-40 °C bis +60 °C, without condensation
Enclosure material:	GRP, epoxy resin, black and brass
Dimensions of iPURGE <sub>dvx</sub> (mm):	length of enclosure: 109
	width of enclosure : 56
	height of enclosure, approx.: 139
	diameter of air inlet: 1/4"
	diameter of air outlet: 3/8"
	cable glands: PG 11 or PG 09
Weight:	1,0 kg

## 4 Installation and Setting-to-Work

<b>Important</b>	For the installation, maintenance and cleaning of the units, it is absolutely necessary to observe the ordinances and provisions concerned with explosion protection (EN 60079-14, EN 50014-50039) as well as the Accident Prevention Regulations (UVV).
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<b>Important</b>	Installation, maintenance and cleaning of the units must only be performed by persons trained and authorized for this purpose, insofar as they are familiar with the units.
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<b>Caution!</b>	Modifications and conversions to the units are not permissible and will cause the Ex protection and the guarantee to become void. Extronics limited is not liable for any subsequent damage.
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### 4.1 Preparatory Work

<b>Important</b>	Before connecting the mains supply, check the units installed in the enclosure. In particular, ensure that there is an adequate flow of air around the units and that any unit casings will be purged properly. Furthermore, ensure that the electrical units are de-energized if there is any loss of pressure. This includes the isolation of any data lines.
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### 4.2 Installation

It is possible to mount the EEx-p system iPURGE150 on or in any casing which is suitable for maintaining an internal overpressure (Extronics recommend the enclosure is at least IP 54).

<b>Important</b>	The wall thickness of the casing should not exceed 4 mm.
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### 4.3 Mounting of the iPURGE150

For external mounting on an enclosure, one hole of 35 mm must be drilled for the air inlet (at the rear side of the controller iPURGE150), and up to 4 mounting holes for the monitoring unit itself.

The iPURGE150 should be mounted where the display can be easily read

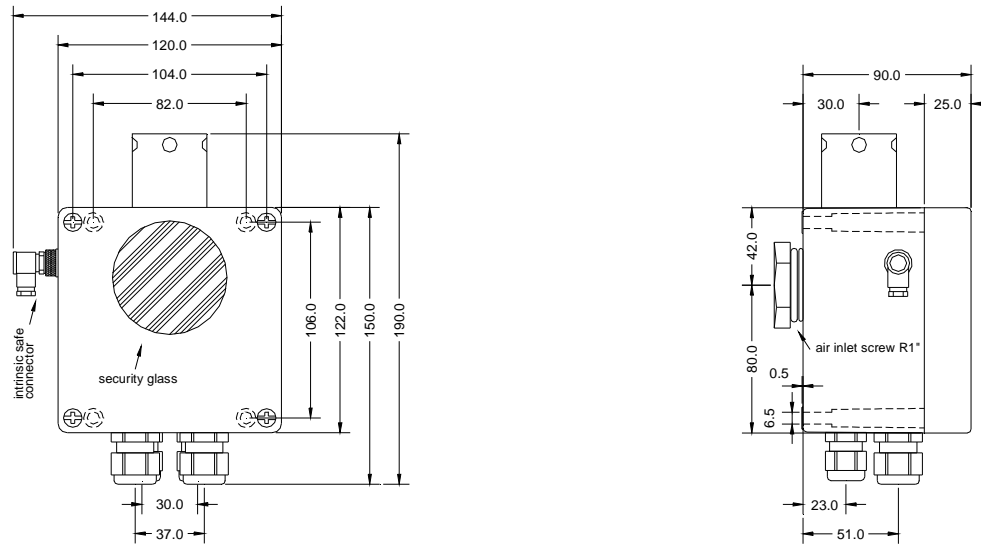


Fig 6: Dimensions of the iPURGE150 controller

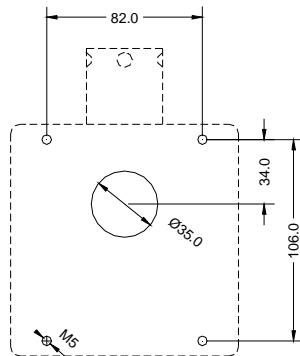


Fig 6a: Mounting holes in the iPURGE150

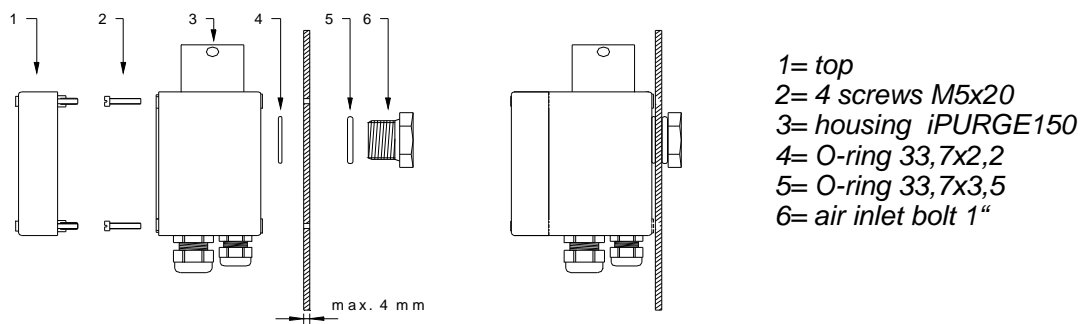
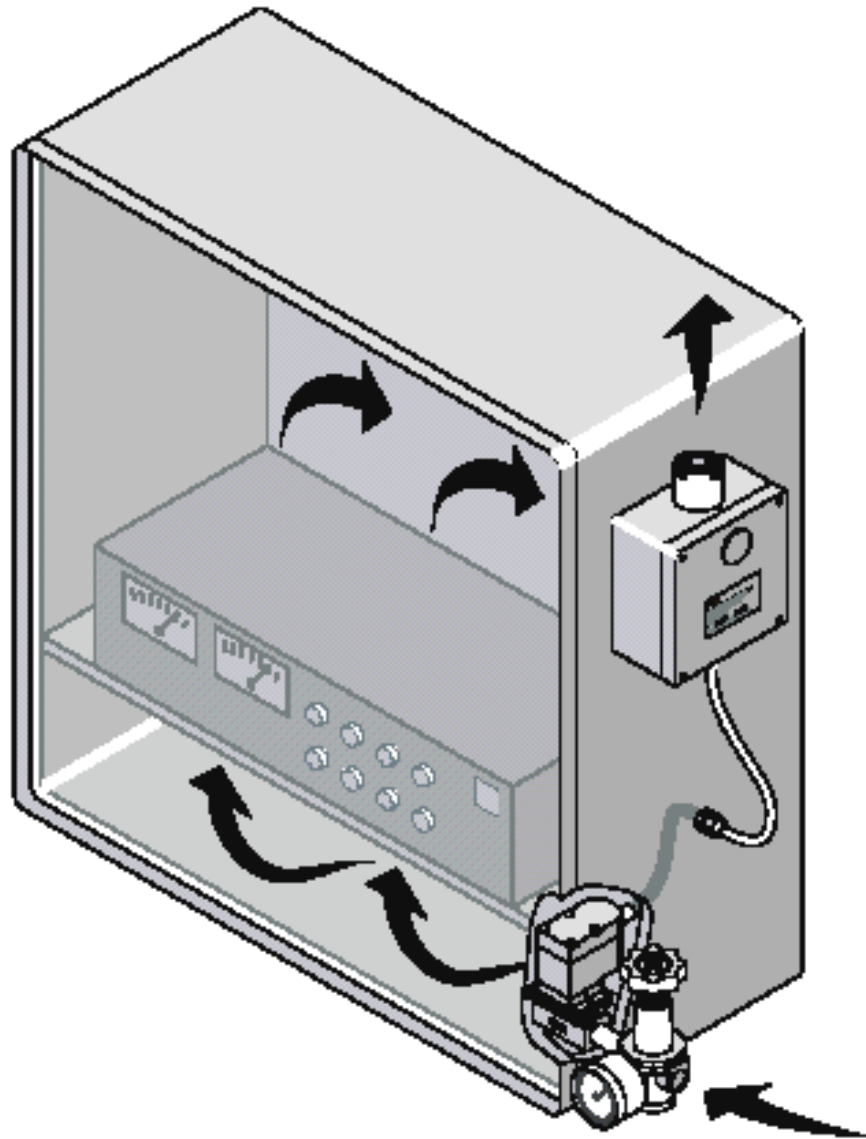


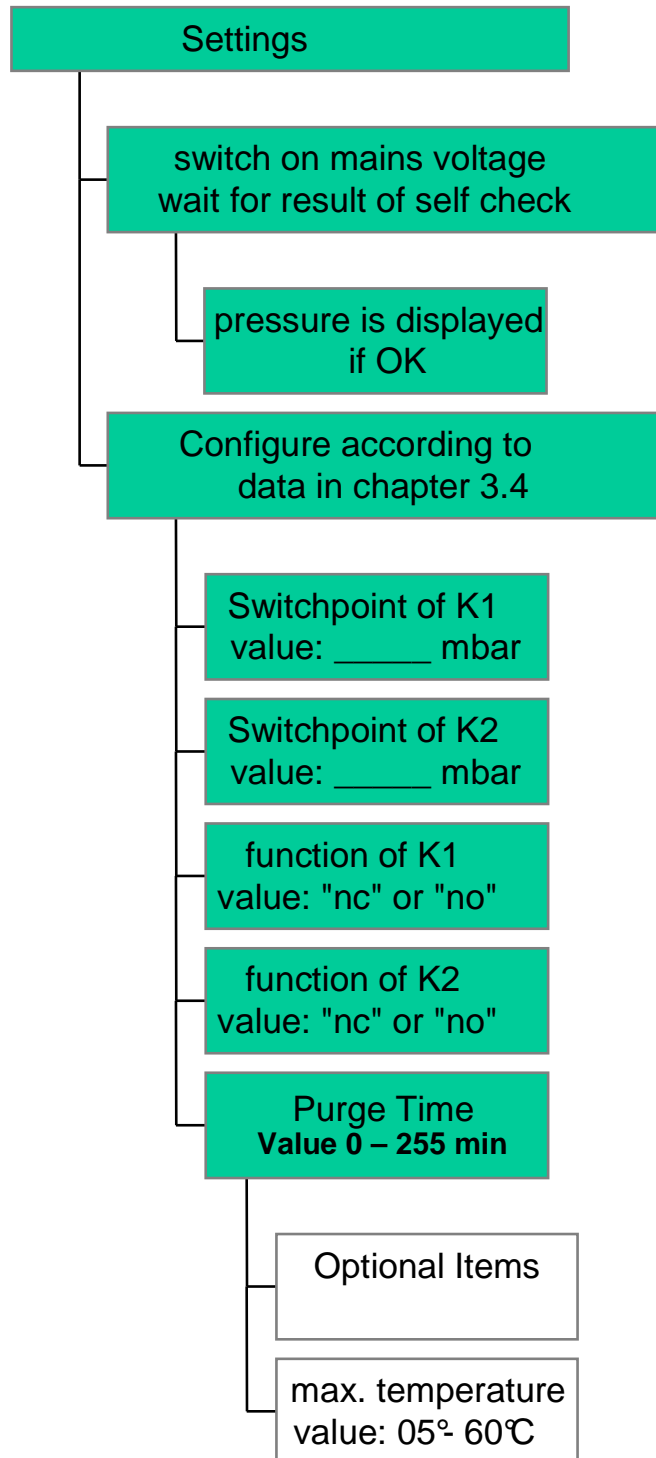
Fig. 7: for mounting to enclosures; components and their positions





*Fig. 8. Proposal for mounting the controller iPURGE150 to an EEx p enclosure*

## 4 Settings



## 4.4 Setting Leakage Air Flow rate

The digital valve is fitted with a leakage compensation adjustment screw, this screw is adjusted to compensate for leaks in the enclosure. The adjustment screw opens the valve and allows air to pass into the enclosure.

To adjust the leakage compensation, ensure the enclosure is sealed. Turn the leakage compensation screw until the overpressure shown on the iPURGE150 control remains constant. Extronics recommend an overpressure is between 1.5 to 3 mbar.

The chart below shows the flow rate through the valve against rotations of the adjustment screw, three curves are shown for varying inlet pressures. The reference point is a fully closed valve (Fully clockwise).

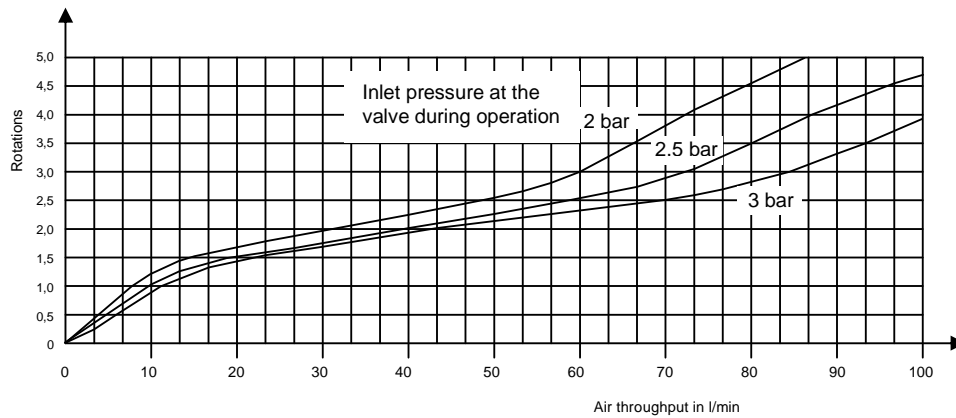


Fig. 10: Leakage air diagram

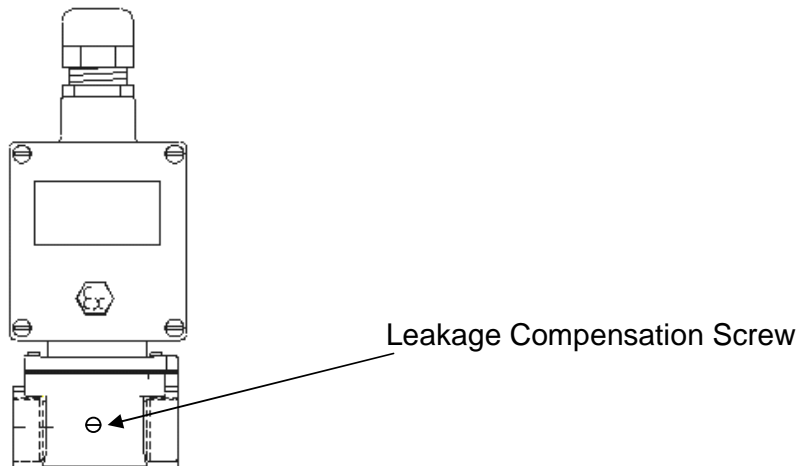


Fig. 11: Adjustment of the leakage compensation nozzle

## 4.5 Electrical connection

**Important:** Ensure that only fuses of the specified type and the appropriate current rating are used as replacements. Jumpering or bypassing of fuses or back-up fuses is inadmissible on principle.

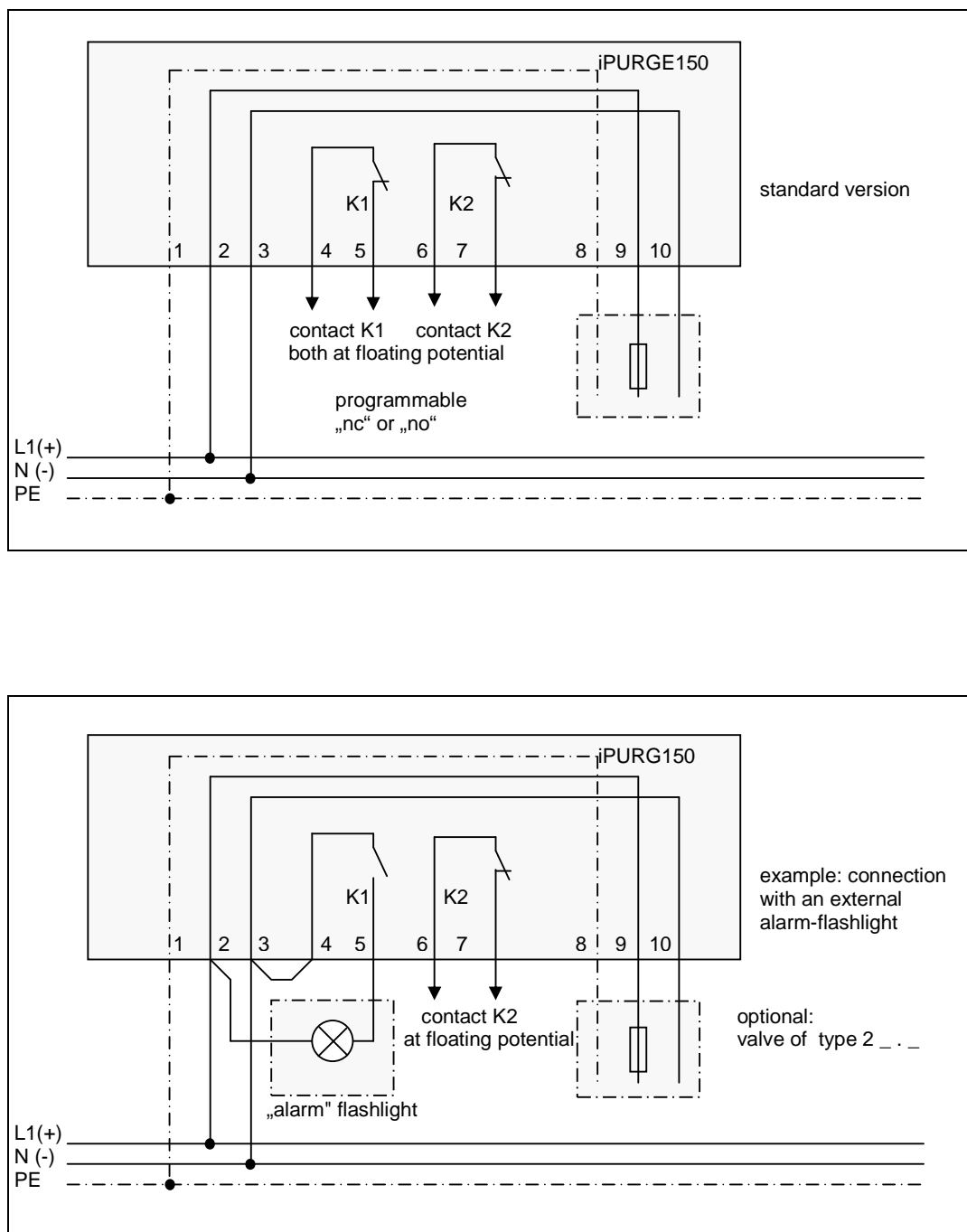


Fig. 12: Circuit diagram for iPURGE150 controller

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## 5 Intended Purpose Usage

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<b>Important</b>	<b>Before setting the units to work, read the technical documentation carefully.</b>
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<b>Important</b>	<b>The latest version of the technical documentation or the corresponding technical supplements is valid in each case.</b>
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The iPURGE150 EEx-p controller is built using modern components and is extremely reliable in operation; however it must only be used for its intended purpose. Please note that the intended purpose also includes compliance with the instructions issued by the manufacturer for installation, setting up and service. Any connections made to the controller must only be with devices which are suitable for use with the controller and the respective protection zone concerning electrical data and protection type.

Any other use is regarded as conflicting with the intended purpose. The manufacturer is not liable for any subsequent damage resulting from such inadmissible use. The user bears the sole risk in such cases.

### 5.1 Transportation and Storage

All units (controller, digital/proportional controller, accessories) must be so transported and stored that they are not subjected to any mechanical stresses over 1.5g, are not dropped from heights exceeding 0.3m and are not exposed to mechanical impact exceeding 3J. For the transportation and storage, the "Ambient Temperature" specified in the Technical Data shall apply.

### 5.2 Authorized Persons

Only persons specially trained for the purpose are authorized to handle the iPURGE150 EEx-p controller; they must be familiar with the unit and must be aware of the regulation and provisions required for explosion protection as well as the relevant accident prevention regulations.

### 5.3 Cleaning and Maintenance

The iPURGE150 and all its components require no maintenance and are self-monitoring. All work on the iPURGE150 controller and/or the digital/proportional controller by personnel who are not expressly qualified for such activities will cause the Ex approval and the guarantee to become void.

Regular cleaning of the sight glass of monitoring units is recommended for units which are mounted externally on an enclosure. Use only mild soap solutions or similar mild detergents.

Before commencing any work on units located inside the enclosure, please take care to observe the applicable regulations, ordinances and provisions.

<b>Important</b>	<b>Installation, maintenance and cleaning of the system and on all components belonging to the system must only be performed by persons trained and authorized for this purpose, insofar as they are familiar with the units.</b>
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### **5.3.1 Safety Precautions**

Before opening the enclosure, it is absolutely necessary to switch off the devices located inside this enclosure and to secure them against renewed powering-up.

<b>Important</b>	<b>For the installation, maintenance and cleaning of the units, it is absolutely necessary to observe the applicable regulations and provisions concerned with explosion protection (EN 60079-14, EN 50014 - 50039) as well as the Accident Prevention Regulations.</b>
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### **5.3.2 Cleaning and Maintenance Intervals**

The cleaning intervals depends on the environment where the system is installed. Please take care to ensure that the display of the monitoring unit is always easy to read.

<b>Warning!</b>	<b>- Electrostatic hazard - Clean only with a moist cloth and detergent</b>
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## 6 Technical Data

Type of Ex-protection:	II 2 GD EEx e m ia IIC T4 T70°C IP66
Electrical data:	$U_0 = 5.35 \text{ V}$ $I_0 = 136 \text{ mA}$ $P_0 = 0.47 \text{ W}$ $L_0 = 10 \text{ } \mu\text{H}$ $C_0 = 47 \text{ } \mu\text{F}$ keystone characteristic
Ambient temperature:	$-30^\circ\text{C} \leq T_{\text{amb}} \leq +60^\circ\text{C}$
Mains voltage:	<ul style="list-style-type: none"> <li>• 12 VDC max.</li> <li>• 24 VDC max.</li> <li>• 24 VAC <math>\pm 10\%</math> f = 48 ... 62 Hz</li> <li>• 115 VAC <math>\pm 10\%</math> f = 48 ... 62 Hz</li> <li>• 230 VAC +8.5 / -10% f = 48 ... 62 Hz</li> <li>• 250 VAC +5 / -15% f = 48 ... 62 Hz</li> </ul>
Current consumption:	30 mA at 230 V AC 60 mA at 115 V AC 300 mA at 24 V AC 250 mA at 12 / 24 V DC
Reset for mains failure:	$\geq 1 \text{ s}$
Enclosure material:	GRP, epoxy resin, black, antistatic
Dimensions (mm):	Length of enclosure: 122 Width of enclosure: 120 Height of enclosure, approx.: 94 Protrusion of air outlet: 40 Diameter of air outlet: 40 Protrusion of cable glands, approx.: 35 Cable glands: 2 x M20 x 1.5 2 x M16 x 1.5
Weight:	2.5 kg
Mechanical versions:	<ul style="list-style-type: none"> <li>• Mounting outside on the enclosure</li> <li>• Installation within the enclosure</li> </ul>

Input sensors:

- internal pressure sensor
- optional external bypass key switch or temperature sensor connected to the 5-pole socket on the side or the 3-pole jack socket on the rear of the unit

Switch points for contacts K1,K2:	0,5 ... 25 mbar	overpressure
	0 ... 255 min	purge time

Adjustable temperature range: 5°C ... 65°C      tempe rature

Data of Contact Circuits according to DIN VDE 0435:

Contact voltage	Type of current	Max. current	Power factor (cos φ)	Utilization category	L/R
250 V	AC	12 A	1		
240 V	AC	3 A	0.3	AC-15	
24 V	DC	12 A			0 ms
30 V	DC	2.5 A		DC-13	50 ms

Terminal assignment:

1: PE (protection earth)  
2 + 3: Power Input  
4 + 5: relay contact K1  
6 + 7: relay contact K2  
8: PE (protection earth)  
9+10: valve voltage output.

Max. conductor cross section

for cables connected with the terminals:  $4 \text{ mm}^2$  (AWG 12  $\approx 3.3 \text{ mm}^2$ )

Factory presets:

K1: 0,8 mbar, "no"  
K2: 1,0 mbar, "no"  
temperature: 40°C  
purge time: 0 min.



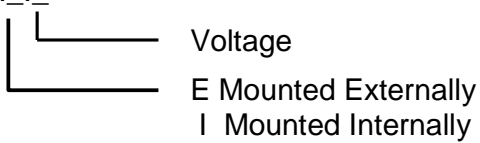
## 7 Type Codes

Versions:

- 12 VDC; 24 VDC
- 24 VAC; 115 VAC; 230 VAC; 250 VAC
- with external pressure or temperature sensor
- mounting inside or outside of the enclosure

The type code is interpreted as follows:

iPURGE150. \_ . \_



Voltage

E Mounted Externally

I Mounted Internally

The mains voltage is printed on the respective field of the type label.

Available mains voltages with limits:

12 VDC

24 VDC

24 VAC

115 VAC  $\pm 10\%$

230 VAC  $+8.5/-10\%$

250 VAC  $+5 /-15\%$

The microcontroller recognizes the types of sensors connected.

## 8 Certification

Translation

(1) **EC-Type Examination Certificate**

(2) Equipment and protective systems intended for use in potentially explosive atmospheres, **Directive 94/9/EC**

(3) **Certificate Number** **TÜV 06 ATEX 553384**

(4) for the equipment: **iPurge 150-\***

(5) of the manufacturer: **Extronics Ltd**

(6) Address: **Meridian House  
Roe Street  
GB-Congleton  
Cheshire CW12 1PG**

Order number: **8000553384**

Date of issue: **2006-09-26**

(7) This equipment or protective system and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The TÜV NORD CERT GmbH, notified body No. 0044 in accordance with Article 9 of the Council Directive of the EC of March 23, 1994 (94/9/EC), certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive. The examination and test results are recorded in the confidential report No. 06 YEX 553384.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

<b>EN 50014:1997</b>	<b>EN 50018:2000</b>	<b>EN 50019:2000</b>
<b>EN 50020:1994</b>	<b>EN 50028:1987</b>	<b>EN 50281-1-1:1998</b>

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-type examination certificate relates only to the design, examination and tests of the specified equipment in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment or protective system must include the following:

**Ex II 2 GD EEx e m Ia IIC T4 T70°C IP 66 bzw.  
II 2 GD EEx d m Ia IIC T4 T70°C IP 66**

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, accredited by the central office of the countries for safety engineering (ZLS), Ident. Nr. 0044, legal successor of the TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

The head of the certification body

*[Signature]*

Schwedt

Hanover office, Am TÜV 1, 30519 Hanover, Fon +49 (0)511 986 1455, Fax +49 (0)511 986 1590

This certificate may only be reproduced without any change, schedule included.  
Excerpts or changes shall be allowed by the TÜV NORD CERT GmbH

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CERT Au VU-H 06/05 5000 dss

(13) **SCHEDULE**(14) **EC-Type Examination Certificate No. TÜV 06 ATEX 553384**(15) **Description of equipment**

The EEx p Controller iPurge 150-\* controls the pressure and notifies the current states via output contacts. The controller is suitable for use in potentially explosive atmospheres of zone 1 and zone 2 as well as adapted for atmospheres with combustible dust of zone 21 and 22.

The typical application is the control of the overpressure in EEx-p-enclosures to avoid the infiltration of potentially explosive atmosphere.

Essentially the controller consists of an enclosure, an terminal block, a partially encapsulated electronic, an air admittance screw connection, an air outlet and sensors for pressure and/or temperature.

The enclosure with a vision panel and the terminal block for connecting the encapsulated electronic are conceived in the type of protection Increased Safety "e". The upper PCB of the electronic is conceived in the type of protection Intrinsic Safety "i" and the both PCBs below are conceived in the type of protection Encapsulation "m".

The electrical connection may optionally be connected to a separately certified bushing and a enclosure, both realised in the type of protection Flameproof Enclosure "d". In this case the terminal block of the electronic is omitted.

Permitted range of the ambient and purging temperature	- 30 °C to 60 °C
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Electrical Data

## Rated Voltage:

max. 12 V DC

max. 24 V DC

24 V AC  $\pm 10\%$ ,  $f = 48...62$  Hz115 V AC  $\pm 10\%$ ,  $f = 48...62$  Hz230 V AC  $+8,5/-10\%$ ,  $f = 48...62$  Hz250 V AC  $+5/-15\%$ ,  $f = 48...62$  Hz



Schedule EC-Type Examination Certificate No. TÜV 06 ATEX 553384

Clamp assignment of the terminal block:

Clamp	Connection
1	PE
2 and 3	Rated Voltage
4 and 5	break contact K1
6 and 7	rated voltage for enable signal
8	PE
9 and 10	rated voltage for valves

The controller may be provided with 3 external pneumatic measuring connections. A mechanical switch, a separate certified console or sensors can be connected to a 5-pin round socket.

Clamp assignment

Contact 1: SSCH (switch)  
Contact 2: TXD (RS485)  
Contact 3: RXD (RS485)  
Contact 4: Vcc  
Contact 5: GND

in type of protection Intrinsic Safe EEx ia IIC

maximum values:

$U_o = 5,35 \text{ V}$

$I_o = 100 \text{ mA}$

$P_o = 535 \text{ mW}$

Characteristic line: trapezoidal

EEx ia	IIC
max. external inductance $L_o$	10 $\mu\text{H}$
max. external capacitance $C_o$	47 $\mu\text{F}$

(16) Test documents are listed in the test report No. 06 YEX 553384.

(17) Special conditions for safe use

none

(18) Essential Health and Safety Requirements

The standards listed in (9) can be replaced by the European Commission by new standards.



Specialists for intrinsically safe  
& explosion proof equipment

#### EC Declaration of Conformity

Extronics Ltd, Meridian House, Roe street, Congleton, CW12 1PG UK

Declare under sole responsibility that the product;

**iPURGE150**

#### Certification:

*To which this declaration relates is in accordance with the provision of the following directives*

**94/9/EC** Equipment and protective systems intended for use in potentially explosive atmospheres.

**89/336/EC** CE Marking for Electromagnetic Compatibility Directive

**72/23/EC** Low Voltage Directive (LVD)

*And is in conformity with the following standards or other nominative documents*

**EN50014:2000** Electrical apparatus for potentially explosive atmospheres - General requirements

**EN50019:2000** Electrical apparatus for potentially explosive atmospheres - Flameproof enclosure 'e'

**EN50020:1994** Electrical apparatus for potentially explosive atmospheres - Intrinsic Safety 'i'

**EN60529:1991** Degrees of protection provided by enclosures (IP Code)

**EN55024:May 1999** Information technology equipment - Immunity characteristics - Limits and methods of measurements

**EN60950:2000** Information technology equipment safety

**EN60079-2:2004** Electrical apparatus for potentially explosive atmospheres - Pressurized enclosures "p"

Signed:

Date: 22/01/08

Nick Saunders  
Technical Service Manager

## 9 Manual Revision

Revision	Description	Date	By
Working Draft	Initial version of Manual	02/02/06	NS
Issue 1	First Issue	31/03/06	NS
Issue 02	Revised Certification	22/01/08	NS